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Review

Pre-anesthesia evaluation in patients with chronic renal disease (emphasis on cardiovascular risk)[☆]

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ABSTRACT

Chronic renal disease is a public health problem worldwide. Several times these patients will undergo surgical procedures related to dialysis or surgeries related to their co-morbidities. The purpose of the pre-anesthesia evaluation is to assess the risk of cardiovascular events and initiate interventions that may influence morbidity and mortality. This article describes the relevant epidemiological data of chronic kidney disease and its cardiovascular risk and provides a guide on clinical assessment, diagnostic tools and strategies to reduce surgical risk. This narrative literature review is based on articles written in both English and Spanish limited to the last 10 years, information from basic textbooks and primary databases (i.e., PUBMED – EMBASE – LILACS), supported by articles referenced in the above-mentioned search.

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Valoración preanestésica en el paciente con enfermedad renal crónica (énfasis en riesgo cardiovascular)

RESUMEN

La enfermedad renal crónica es un problema de salud pública mundial. En varias ocasiones los pacientes son llevados a cirugías relacionadas con su diálisis con operaciones propias de sus comorbilidades. El propósito de la valoración preanestésica es asesorar el riesgo de eventos cardiovasculares e iniciar las intervenciones que puedan influir en su morbilidad.

Palabras clave:

Insuficiencia renal crónica

Fallo renal crónico

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Mortalidad
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El presente artículo describe datos epidemiológicos relevantes de la enfermedad renal crónica, así como su riesgo cardiovascular, y nos orienta en su valoración clínica, ayudas diagnósticas y estrategias para reducir el riesgo quirúrgico. La presente revisión narrativa de la literatura fue desarrollada con artículos escritos en inglés y español, limitados a los últimos 10 años, información referenciada en textos guía y bases de datos primarias (como Pubmed-Embase-Lilacs), complementada con artículos referenciados de la anterior búsqueda.

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Introduction

The pre-anesthesia evaluation is a comprehensive assessment of the patient's health, including the measurement of the functional organic reserves and any potential complications during the perioperative period that result in a clinical risk profile to guide the interventions that affect morbidity and mortality in the short and long term.¹

The National Kidney Foundation recommends that the evaluation of patients with chronic renal disease focus on: etiological diagnosis, comorbidities, severity (level of renal function), complications and estimating the risk of renal function loss and cardiovascular complications. All these parameters of the pre-anesthesia evaluation shall be accompanied by a consideration of the surgery-related risks, in order to optimize risk factors.²

Methodology

The methodology was non-systematic narrative literature review in both English and Spanish, limited to the last 10 years, of information published in textbooks, primary databases (i.e., PUBMED – EMBASE – LILACS) and complemented with articles referenced in the above-mentioned search. The English keywords used were: kidney disease, chronic kidney failure, perioperative care or perioperative period, mortality and anesthesia. The Spanish search included the words: Enfermedad Renal, Falla Renal Crónica, Cuidado Perioperatorio y/o Perioperatorio. Both the search and the selection of articles was done independently by the various authors; each group read, analyzed, associated new references and prepared a draft for further analysis, validation (by the research group) and correction to render the best final version.

The search in PUBMED used the following formula and Boolean descriptors: (((("kidney diseases"[MeSH Terms] OR ("kidney"[All Fields] AND "diseases"[All Fields] OR "kidney diseases"[All Fields]) AND ("perioperative care"[MeSH Terms] OR ("perioperative"[All Fields] AND "care"[All Fields]) OR "perioperative care" [All Fields])) AND ("kidney failure, chronic" [MeSH Terms] OR ("kidney"[All Fields] AND "failure"[All Fields] AND "chronic"[All Fields]) OR "chronic kidney failure"[All Fields] OR ("kidney"[All Fields] AND "failure"[All Fields] AND "chronic"[All Fields]) OR "mortality"[Subheading] OR "mortality"[All Fields] OR "mortality"[MeSH Terms])) AND ("anaesthesia"[All Fields] OR "anesthesia"[MeSH Terms] OR "anesthesia"[All Fields])).

Thus, eight articles were obtained of which one was included. The EMBASE search used a similar methodology but no additional articles different from those in PUBMED were identified. Three articles were found in the LILACS search, using the words (Renal Disease) AND (Perioperative care); there were no articles with (Chronic renal failure) AND (Perioperative care) and one with (Chronic Renal Failure) AND (Perioperative); none of the four articles found was included. All the articles were read and those related to the topic of interest were selected; referenced articles published in relevant books and articles were investigated and 54 references were included. In total, 55 articles were included with the general methodology. Few of the articles herein are the result of primary research, which indicates the limited research and publications on the topic; consequently, we have the responsibility for providing arguments with vital information that is not necessarily obtained from the articles and far less from indexed information with these Boolean descriptors.

Epidemiology

Chronic renal disease is a public health problem; in 2008, the incidence of chronic renal disease was 4.3% in people over 65 years of age (3.7 fold the 1995 figures) and a prevalence of 7.6% (4.6 times the 1995 figures); it was also established that the prevalence of diabetes mellitus, high blood pressure and cardiovascular disease was higher in patients with chronic renal disease and further increased as the glomerular filtration rate decreases (see Table 1).³

Table 1 – Prevalence (%) diabetes mellitus, arterial hypertension and cardiovascular disease in chronic renal disease according to the CKD-EPI equation.

Stage	Diabetes mellitus	High blood pressure	Cardiovascular disease
No	4.8	23.6	5.9
CRD			
1	19.8	35.7	6.7
2	2.8	52.2	24.0
3	19.1	64.1	35.7
4-5	36.9	82.2	63.0
All	7.2	27.9	8.9

Adapted from: 2010 Annual Data Report: atlas of chronic kidney disease and end-stage renal disease in the United States, National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, MD, 2010.